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Filed : March 23, 2004

REMARKS

Claim 8 has been amended to clarify the invention. Claims 29 and 30 which are readable upon the elected invention (apparatus) have been added. Support can be found in Figs. 1-5 and paragraphs 40-42 on pages 9-11, for example. No new matter has been added. Applicant respectfully requests entry of the amendments and reconsideration of the application in view of the amendments and the following remarks.

Claim objections

Claim 8 has been objected to because the added limitation was not underlined. Claim 8 has been amended, thereby obviating this objection.

Response to Arguments

The Office action states: "Applicant's argument regarding Murata reference not teaching about plate type electrode is not found persuasive, since Murata does teach that heater 34 (lower electrode) is disposed in parallel to the ladder-shaped electrode 32 for plasma discharge generation. Further, ladder shaped electrode 32 is plate shaped (Figure 2)." However, the above statement is inconsistent with a fair understanding of the technology.

The Murata reference itself states:

The conventional plasma CVD apparatus can be classified typically into a type in which is used a **ladder type electrode** for discharge generation and another type in which are used **plate electrodes arranged in parallel**. The ladder type electrode includes, for example, a ladder antenna electrode and a ladder inductance electrode. *Col. 1, lines 15-20* (emphasis added.)

The ladder-type electrode is an inductance electrode and has no other electrode disposed in parallel. In Murata, the heater 34 is simply a heater, not a lower electrode, because the ladder-type electrode and the heater are not capacitively coupled. On the other hand, the parallel-plate electrodes are capacitively-coupled electrodes disposed face to face. Those skilled in the art could not recognize that the heater 34 is a lower electrode simply because the heater 34 is disposed in parallel.

Further, even if the ladder-type electrode is plate-shaped, that does not make the ladder-type electrode change to parallel-plate type electrodes. Murata well recognizes the differences between the ladder-type electrode and the parallel-plate type electrodes and describes the problems separately. See,

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e.g., col. 2 and col. 3. Murata then provides a solution only with regard to the ladder-type electrode, and Murata in no way teaches that his solution can apply to the parallel-flat type electrodes.

It is well settled that the broadest reasonable interpretation of the claims must be consistent with the interpretation that those skilled in the art would reach. *In re Cortright*, 165 F.3d 1353, 1359, 49 USPQ2d 1464, 1468 (Fed. Cir. 1999) In view of the above, although the Office action states "Thus Murata reference teaches claim limitations in this respect and the rejection is maintained," it is unfair to reach the conclusion.

Rejection of Claims 1-6, 9, 14-17 Under 35 U.S.C. § 103

Claims 1-6, 9, 14-17 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Murata in view of Blonigan (US2002/0046989A1) and Keane (US5,195,045).

As described above, although Murata well recognizes the differences between the ladder-type electrode and the parallel-plate type electrodes and describes the problems separately, Murata provides a solution **only** with regard to the ladder-type electrode, and Murata in no way teaches or suggests that his solution can apply to the parallel-flat type electrodes. This is because the inductance electrode and the capacitively-coupled electrodes are very different (for the latter, the capacitive coupling predominantly controls plasma generation). Upon reading Murata, a person of ordinary skill in the art would not be motivated to apply the multiple supply terminals to parallel-plate electrodes.

In *Optivus Technology, Inc. v. Loma Linda University Medical Center* (469 F.3d 978 (2006 U.S. App.)), the Court noted that "[a] reference may be said to **teach away** when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." Thus, Murata at least does not provide a motivation to apply multiple supply terminals to parallel-plate electrodes.

Claim 1 recites, among others:

said radio-frequency transmission unit comprising:
an inlet transmission path and multiple branches branched off from the inlet transmission path, wherein each branch connected to the supply point of the parallel-electrode is multiple branchings downstream of the inlet transmission path and has a substantially equal characteristic impedance value; and

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at least one **inductance adjuster** which is **removably installed in at least one branch** to **render substantially equal the characteristic impedance value of each branch** connected to the multiple supply points.

The Office action states: "applicant's clarification regarding claim limitation pertaining to equal characteristic impedance in each of multiple branches adjusted by a removable adjuster, not being taught by the prior art references is found persuasive and the rejection is withdrawn." (in the section of Response to Arguments). However, the Office action states that new reference Blonigan teaches that "each strap can be removably connected by the user to one of several locations like 280A, 280B, 280C through a stud and screw arrangement." The Office action at page 4. However, in Blonigan, the strap itself is a branch and **no** removable inductance adjuster is **installed in the branch**. The several locations such as 280A, 280B, 280C are not branches but simply locations. Further, in Blonigan, the characteristic impedance value of **each branch (strap)** **cannot** be rendered substantially equal. The fact that the branch (strap) is removably connected to one of several locations is unrelated to the above feature.

Further, the Office action states that Keane teaches that "capacitor 232 is removed and fixed inductor 226 is replaced by a variable inductor 232a (inductance adjuster) [column 28, line 61 to column 30, line 15]." However, Keane states:

The object of Matching Circuit 220 shown in FIG. 2 is to "rotate" impedance point 720 into the characteristic-impedance point 714 by a construction of three arcs. *Col. 28, lines 66 to col. 29, line 1.*

Thus, in Keane, the variable inductor is used for rotating the impedance point of the load impedance into the characteristic-impedance point. The load impedance is a representation of the parallel plate electrodes of a plasma etching chamber (*Col. 6, line 68 to col. 7, line 1*). Also, as shown in Figs. 1, 2, and 2A of Keane, the matching apparatus 20 matches the load impedance of the parallel plate electrodes to the characteristic impedance. Keane teaches nothing about multiple branches. Further, Keane teaches nothing about rendering the characteristic impedance value of **each branch** substantially equal. Keane teaches simply matching the load impedance of the parallel plate electrodes itself.

Thus, none of the prior art references provides predictability of at least one inductance adjuster removably installed in at least one branch to render substantially equal the characteristic impedance value of each branch connected to the multiple supply points. None of the prior art

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references including Murata recognizes that the above features are effective in the parallel plate electrodes (i.e., capacitively coupled electrodes). Thus, the prior art references, alone or combined, cannot lead to claim 1. In this regard, claims 15 and 16 recites limitations similar to those recited in claim 1. In view of the foregoing, claims 1, 15, and 16, and dependent claims could not be obvious over the references. Applicant respectfully requests withdrawal of this rejection.

Rejection of Claims 8, 11 Under 35 U.S.C. § 103

Claims 8 and 11 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Murata in view of Blonigan and Keane and further in view of McGaffigan (US 5,182,427). However, like Murata, Blonigan and Keane, McGaffigan does not provide predictability of the above discussed features of the invention recited in claim 1. Claims 8 and 11 depend ultimately from claim 1, and at least for this reason, claims 8 and 11 cannot be obvious over the above references. Applicant respectfully requests withdrawal of this rejection.

Rejection of Claim 10 Under 35 U.S.C. § 103

Claim 10 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Murata in view of Blonigan and Keane and further in view of Parsons (US 6,884,635). However, like Murata, Blonigan and Keane, Parsons does not provide predictability of the above discussed features of the invention recited in claim 1. Claim 10 depends from claim 1, and at least for this reason, claim 10 could not be obvious over the above references. Applicant respectfully requests withdrawal of this rejection.

Rejection of Claims 12, 13 Under 35 U.S.C. § 103

Claims 12 and 13 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Murata in view of Blonigan and Keane and further in view of DeOrnellas. However, like Murata, Blonigan and Keane, DeOrnellas does not provide predictability of the above discussed features of the invention recited in claim 1. Claims 12 and 13 depend ultimately from claim 1, and at least for this reason, claims 12 and 13 could not be obvious over the above references. Applicant respectfully requests withdrawal of this rejection.

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New claim

Claims 29 and 30 have been added. Claim 29 further limits the location of the multiple supply points. None of the references teaches the location. Claim 30 limits that the electrodes are showerhead and susceptor. As shown in Murata, the ladder type electrode cannot serve as a showerhead. Additionally, claims 29 and 30 depend ultimately from claim 1. Thus, for these reasons, claims 29 and 30 cannot be obvious over the references.

CONCLUSION

In light of the Applicant's amendments to the claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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